Volunteer Lake Assessment Program Individual Lake Reports

HOWE RESERVOIR, DUBLIN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	6,592	**Max. Depth (m):**	4.7	**Flushing Rate (yr^{1})**	5.7
Surface Area (Ac.):	258	**Mean Depth (m):**	2.5	**P Retention Coef:**	0.51
Shore Length (m):	8,900	**Volume (m^{3}):**	2,585,500	**Elevation (ft):**	1274

TROPHIC CLASSIFICATION

Year	Trophic class
1999	MESOTROPHIC
2008	MESOTROPHIC

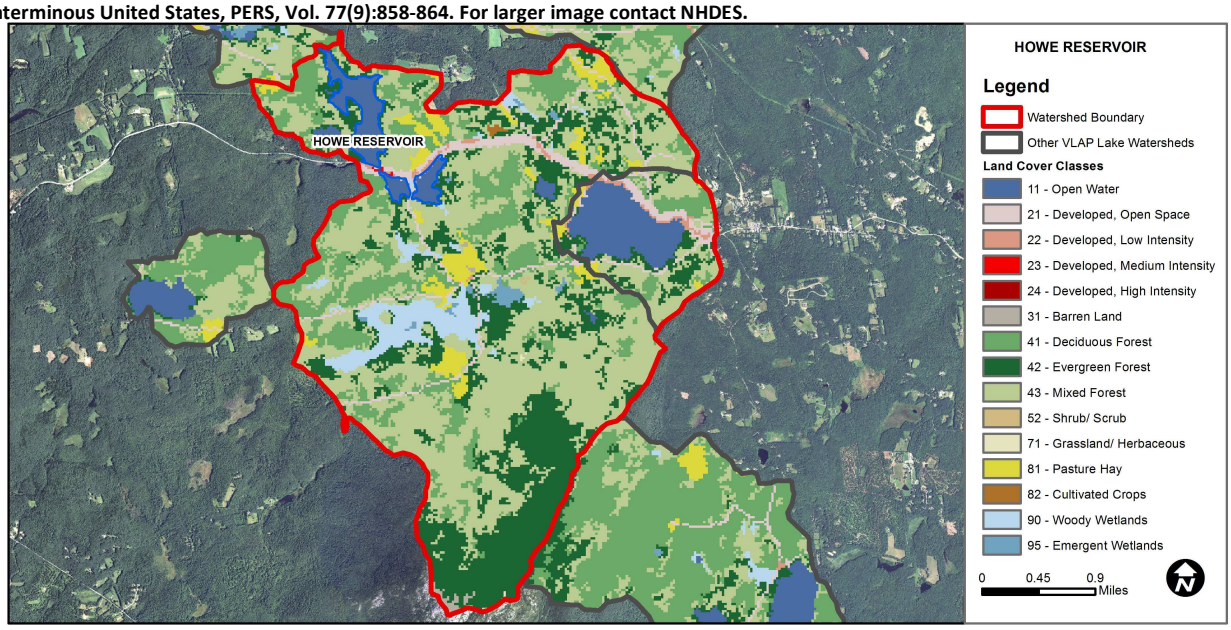
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	The calculated median is fewer than 5 samples but > indicator and the chlorophyll a indicator is okay. More data needed.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Cautionary	The calculated median is fewer than 5 samples but > indicator. More data needed.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Encouraging	There are < 10 samples with 0 exceedances of indicator. More data needed.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	7.07	Barren Land	0.32	Grassland/Herbaceous	0.05
Developed-Open Space	3.78	Deciduous Forest	16.03	Pasture Hay	4.26
Developed-Low Intensity	0.62	Evergreen Forest	22.65	Cultivated Crops	0.09
Developed-Medium Intensity	0.04	Mixed Forest	40.34	Woody Wetlands	3.9
Developed-High Intensity	0	Shrub-Scrub	0.04	Emergent Wetlands	0.6

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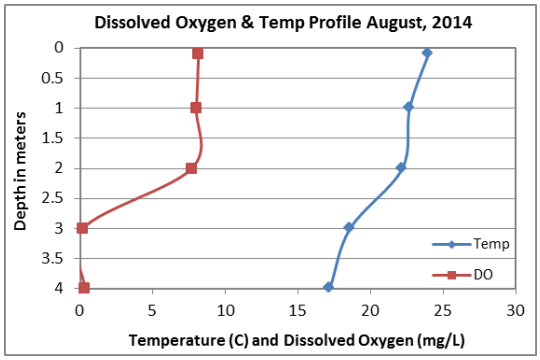
Howe Reservoir, Dublin

2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were slightly elevated, greater than the state median, and increased from 2013.
- **Conductivity/Chloride:** Deep spot and Inlet conductivity and chloride levels were average and approximately equal to the state medians.
- **Total Phosphorus:** Epilimnetic (upper water layer) and hypolimnetic (lower water layer) phosphorus levels were low and less than the state median. Epilimnetic phosphorus levels decreased from 2013. Charcoal Brook Inlet and Wight Pond Inlet phosphorus levels were within average ranges for those stations.
- **Transparency:** Transparency was very good in 2014, improved from 2013, and was better than the state median.
- **Turbidity:** Epilimnetic turbidity levels were average and hypolimnetic turbidity levels were slightly elevated. Charcoal Brook and Wight Pond Inlet turbidities were average.
- **pH:** Epilimnetic pH was within the desirable range 6.5-8.0 units, however hypolimnetic pH levels were less than desirable.
- **Recommended Actions:** Increase monitoring frequency to once per month during the summer, typically June, July and August. This will allow better assessment of seasonal water quality and historical water quality trends, and decrease variability among data. Water quality was generally within low to average ranges, however chlorophyll-a levels were slightly above average.



Station Name	Table 1. 2014 Average Water Quality Data for HOWE RESERVOIR-DUBLIN								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	3.20	6.65	5	35.9	7	3.55	3.35	0.98	6.56
Hypolimnion				35.6	9			1.84	6.06
Charcoal Brook Inlet			6	39.7	11			1.14	6.51
Wight Pond Inlet			5	36.1	14			1.26	6.45

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	N/A	Ten consecutive years of data necessary for analysis.	Chlorophyll-a	N/A	Ten consecutive years of data necessary for analysis.
pH (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.	Transparency	N/A	Ten consecutive years of data necessary for analysis.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.